



THE USE OF NEEM OIL (*Azadirachta indica* A. Juss) FOR THE TREATMENT OF BOVINE UDDER ULCER.

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ABSTRACT

This experiment has been conducted at an organic dairy farm located in the Municipality of Lorena, SP, Brazil.

The farm owns a 72-head herd of Holstein, of which 43 are adult females. Of these, 35 are lactating cows, producing 350 liters per day in average.

The occurrence of udder ulcers in the herd affected approximately 15% of adult cows.

Before adopting the organic handling, the treatment used was based on Lepecid® and tincture of iodine at 2%, with constant recurrence of the disease.

This process is etiologically associated with a nematode - *Stephanofilaria spp.* - with the possibility of bacterial secondary infections.

There are several species of *Stephanofilaria spp.* , which cause various lesions in different bovine body parts.

Attracted by lesions on the skin, which are caused by adult parasites, the *Muscidae* vectors ingest the exudate microfilariae.

The development at L3 takes approximately three weeks with the definitive host being infected when the flies deposit the larvae on normal skin.

Although adult worms and microfilariae can be found on the lesions, they are scarce, and the results of many skin/lesions scrapings are negative.

For organic production purposes, given the need for treatment, therapies such as homeopathy and phytotherapy, among others, should be used.

Under the organic production principles, a phytotherapeutic alternative for treatment of udder ulcer in dairy cattle was sought.

The Neem seed oil (*Azadirachta indica* A. Juss) (85%), topically used, enhanced healing of the pathological processes in 7 days in the case of ulcers of some 6cm in diameter, without recurrence in the period from March through December 2003.

I. INTRODUCTION

This experiment has been conducted at an organic dairy farm located in the Municipality of Lorena, SP, Brazil.

The farm owns a 72-head herd of Holstein, of which 43 are adult females. Of these, 35 are lactating cows, producing 350 liters per day in average.

The occurrence of udder ulcers in the herd affected approximately 15% of adult cows.

Before adopting the organic handling, the treatment used was based on Lepecid® and tincture of iodine at 2%, with constant recurrence of the disease.

Where conventional handling is used, one may opt for either systemic treatment with ivermectinas or local application of ointments containing 5% to 10% of organo-phosphorus compounds.

Udder Ulcers

The udder ulcers appear on the ventral aspect of bovine abdomen, near the anterior udder insertion.

Usually small during the dry season, they grow after labor causing distress to the animal.

This process is etiologically associated with the *Stephanofilaria spp* nematode, with the possibility of subsidiary bacterial infections. (1)

Filaria are helminths found as parasites in most of domestic and wild animals and even in humans.

In Brazil, the occurrence of stephanofilaria was reported by Oba et al. (1977) and Novaes et al. (1988).

This genus of very small worms (less than 1 cm long), which is responsible for chronic dermatitis in bovine and bubalus, is sheltered in the dermis.

There are several species of *Stephanofilaria spp.* which cause different types of lesions in parts of bovine body such as the withers, ears, hoofs and around the eyes.

The muscidae vectors (for example, *Haematobia irritans*) are attracted to open skin lesions caused by adult parasites and ingest microfilarias contained in the exudate. The development in L3 takes approximately three weeks, the definitive host being infected when flies deposit their larvae on normal skin. The lesions begin to appear in two weeks from infection. Initially, the skin shows a nodular outgrowth which evolves into a papular eruption with blood and pus exudate. At the center of the lesion there may be loss of skin, whereas hyperkeratosis is usually found at the edges. The process is essentially an exudative dermatitis, usually of a hemorrhagic nature, which attracts muscidae.

The economic losses are usually due to permanent damage to the animal's hide, and dramatic reduction of milk production, in turn a result of pain from the lesions and irritation by flies. Also, there may be secondary udder contamination, with aggravation of the symptoms and exhalation of an unpleasant smell, all of which renders the animal susceptible to mastitis, given the proximity of the contaminated lesion to the udder orifice.

Although adult worms and microfilarias are found in lesions, they are usually scant, with swabs often giving negative result. The topical treatment is usually effective. Control is seldom feasible, given the vectors' ubiquity. However, should it be feasible, it would have to be made using insecticides or insect repellents

Organic Handling

Organic production is increasing at a fast pace worldwide, Latin American countries being no exception.

Brazil currently ranks second among Latin American countries in quantity of organically-handled areas. It is estimated that some 100,000 ha. are thus cultivated by 4,500 organic production units.

The annual Brazilian organic production is estimated to be worth between US\$120 million and US\$200 million (IFOAM, 2000; Jornal Valor Econômico, quoted by Agrorgânica, 2001).

Under the organic agriculture principles, animal-related activities must be as integrated as possible to vegetal production, thereby aiming at optimizing recycling of nutrients (animal excrements, vegetal biomass), enabling lower dependence on external input (feed) and making all direct and indirect benefits from such integration capable of coming into being.

As regards veterinary treatment, the main objective of organic raising practices is to prevent diseases.

In the event of a disease, the cause thereof must be identified and its future occurrence carefully prevented, by modifying handling techniques. However, given the need for treatment, homeopathy and phytotherapy, among other therapies, must be used

In compliance with organic production principles, a phytotherapeutic alternative was sought for treatment of dairy cattle's udder ulcer.

Under the organic system, the conventional treatment based on the use of ivermectin and topic application of insecticides and insect repellents is unfeasible.

Accordingly, Neem, (*Azadirachta indica*) was used as an alternative treatment of the aforementioned syndrome, widely spread among dairy herds.

The Neem , (Azadirachta indica)

This India's and Southeastern Asia's native tree has numerous applications.

Also, for several centuries, Neem's derivative products have been used for medicinal and plague control purposes, particularly in India.

Mainly used as bioinsecticide, it has been reported effective in the control of 400 insect species, in addition to spiders and nematodes.

The substances contained in Neem may affect nourishment; growth; metamorphosis; egg fertility; egg-laying; jumping, climbing and flying habits, the senses of sight and smell; as well as mating behavior of insects . (Nayan e Upadhyay point to the potential use of Neem extracts and seeds for controlling endoparasites and ectoparasites in humans and animals.

From its seeds a sour, bitter yellow-greenish to coffee-colour oil is obtained. This oil, with fungicidal and antiseptic properties, is effective against Gram-positive and Gram-negative microorganisms.

II. MATERIAL AND METHODS

The observations described herein took place in the period from April through December 2003.

Before introducing the organic handling for milk production purposes, the lesions were treated as common injuries, with no previous diagnosis of the process etiology .

After introduction of organic handling procedures, a presumptive diagnosis of the process was made, as it is difficult to isolate larvae found in the lesions, with false negative results being rather common.

The infected animals, both dry and lactating cows with lesions at any stage or of any size were treated as follows:

1. Wash of the infected site with water (from the municipal water treatment system) and brushing for removal of scab and dirt;
2. Drying of the internal part and edges of the lesions using disposable paper towels;
3. Application of Neem oil (Dalneen ®) using a cotton swab, once a day, until the lesion is completely healed.

III. FINDINGS AND CONCLUSION

10 animals were treated, whose lesions were 6 cm in diameter in average, with scabs and serum-bloody secretions.

Lesions with up to 6 cm in diameter were completely healed after 7 days of treatment, with no recurrence in a single animal and gradual decrease of udder ulcer incidence among the herd.

With conventional topical treatments, the healing process may take up to 15 days, with recurrence rates of up to 60%.

It is worth stressing that this syndrome is also called “summer injury”, due to its higher incidence in the hot months of the year, where the muscidae vectors’ s proliferation is more intense.

However, the treatment with Neem was effective even in the pre-summer October-December period, when proliferation of vectors is already intense.

Through its insecticide and antiseptic action, Neem eliminates microfilarias, repels vectors and avoids secondary contamination of the lesion, thus facilitating healing.